

## Abstract

[0048] The object of a pulsed laser arrangement and a method for adjusting the pulse length of laser pulses is to change the pulse length over a wide range substantially independent from the laser output power, in particular to counteract a reduction in output and to prevent a negative change in the beam parameters when lengthening the pulse by means of varying the oscillator output. A multistage laser amplifier in which an amplifying medium with a small-signal amplification of more than 10 is provided in every stage (17 - 22) is arranged downstream of a diode-pumped Q-switched solid state laser oscillator with variable oscillator output for supplying oscillator pulses. The total small-signal amplification brought about by all of the amplifying media is greater than 1000. The pulsed laser arrangement and the method can be used for industrial and medical purposes requiring pulse lengths in the range of several hundred ns to several  $\mu$ s at pulse repetition rates between 10 kHz and 200 kHz.